CLAIMS

1. An isolated polynucleotide comprising an *s-ship* promoter capable of promoting transcription operably connected to a heterologous nucleic acid sequence.

2. The isolated polynucleotide of claim 1, wherein the promoter comprises at least 20 contiguous nucleotides from SEQ ID NO:1 , SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5.

3. The isolated polynucleotide of claim 2, wherein the promoter comprises at least 50 nucleotides from SEQ ID NO:1 , SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5.

4. The isolated polynucleotide of claim 3, wherein the promoter comprises at least 100 nucleotides from SEQ ID NO:1 , SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5.

5. The isolated polynucleotide of claim 4, wherein the promoter comprises at least 500 nucleotides from SEQ ID NO:1 , SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5.

6. The isolated polynucleotide of claim 5, wherein the promoter comprises at least 1000 nucleotides from SEQ ID NO:1 , SEQ ID NO:2, or SEQ ID NO:5.

7. The isolated polynucleotide of claim 6, wherein the promoter comprises at least 5000 nucleotides from SEQ ID NO:1 , SEQ ID NO:2, or SEQ ID NO:5.

8. The isolated polynucleotide of claim 7, wherein the promoter comprises about 6.3 kilobases from SEQ ID NO:1 or SEQ ID NO:5.

9. The isolated polynucleotide of claim 8, wherein the promoter comprises about 7.6 kilobases from SEQ ID NO:1 or SEQ ID NO:5.

10. The isolated polynucleotid eof claim 1, comprising a sequence that hybridizes under stringent conditions to the complement of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4 or SEQ ID NO:5.

11. The isolated polynucleotide of claim 10, comprising SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4 or SEQ ID NO:5.

12. The isolated polynucleotide of claim 1, wherein the promoter is capable of promoting tissue-specific transcription.

13. The isolated polynucleotide of claim 1, comprising a sequence that can hybridize under stringent conditions to nucleic acid segment comprising the complement of i) at least 20 contiguous nucleic acids of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4,

or SEQ ID NO:5; or ii) SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10 and/or SEQ ID NO:11.

14. The isolated polynucleotide of claim 13, comprising a sequence that can hybridize under stringent conditions to nucleic acid segment comprising the complement of i) at least 50 contiguous nucleic acids of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5.

15. A nucleic acid comprising a promoter operably attached to a nucleic acid sequence from an *s-ship* gene or a portion thereof and a marker sequence, wherein the *s-ship* gene is disrupted by the marker sequence.

16. The nucleic acid of claim 15, wherein the promoter is an *s-ship* promoter.

17. The nucleic acid of claim 15, wherein the promoter is constitutive.

18. The nucleic acid of claim 15, wherein the promoter is inducible or conditional.

19. An expression cassette comprising an *s-ship* promoter operably connected to a heterologous nucleic acid segment.

20. The expression cassette of claim 19, wherein the heterologous nucleic acid segment encode a protein.

21. The expression cassette of claim 20, wherein the nucleic acid segment is a reporter gene.

22. The expression cassette of claim 21, wherein the reporter gene encodes a gene product that is colorimetric, enzymatic, luminescent, or fluorescent.

23. The expression cassette of claim 19, wherein the nucleic acid segment encodes a therapeutic or diagnostic gene product.

24. The expression cassette of claim 23, wherein the therapeutic or diagnostic gene product is a polypeptide.

25. The expression cassette of claim 23, wherein the therapeutic or diagnostic gene product is an RNA molecule.

26. The expression cassette of claim 25, wherein the RNA molecule is an siRNA or miRNA molecule.

27. The expression cassette of claim 23, wherein the nucleic acid segment encodes a therapeutic gene product.

28. The expression cassette of claim 27, wherein the therapeutic gene product is selected from the group consisting of a tumor suppressor, oncogene, a cytokine, a cytokine receptor, a differentiation-inducer, growth factor, and a growth factor receptor.

29. A vector comprising an *s-ship* promoter.

30. The vector of claim 1, wherein the *s-ship* promoter is operably attached to a nucleic acid segment.

31. The vector of claim 30, wherein the nucleic acid segment is all or part of an *s-ship1* coding sequence.

32. The vector of claim 30, wherein the nucleic acid segment is heterologous.

33. The vector of claim 29, wherein the vector is a plasmid, YAC, BAC, or virus.

34. The vector of claim 29, comprised in a pharmaceutically acceptable formulation.

35. A host cell comprising an *s-ship* promoter operably attached to a heterologous nucleic acid segment.

36. The host cell of claim 35, wherein the host cell is eukaryotic.

37. The host cell of claim 36, wherein the host cell is an embryonic cell.

38. The host cell of claim 37, wherein the embryonic cell is a blastocyst cell.

39. The host cell of claim 36, wherein the host cell is a hematopoietic cell.

40. The host cell of claim 36, wherein the host cell is a stem or progenitor cell.

41. The host cell of claim 40, wherein the stem or progenitor cell is from tissue selected from a group consisting of skin, a hair follicle, cornea, embryo, gonads, mammary gland, pancreas, and vascular smooth muscle.

42. A recombinant host cell in which one or both *s-ship* genes is disrupted by marker sequence.

43. A transgenic animal comprising an *s-ship* promoter region operably attached to a heterologous nucleic acid segment.

44. The transgenic animal of claim 43, which is a mammal.

45. A mammal having cells comprising an *s-ship* transgenic sequence.

46. The mammal of claim 45, wherein the *s-ship* transgenic sequence comprises a *s-ship1* coding sequence flanked by loxP sequences.

47. The mammal of claim 46, further comprising a heterologous nucleic acid sequence encoding a Cre recombinase.

48. The mammal of claim 47, wherein the nucleic acid sequence encoding the Cre recombinase is under the control of an inducible or conditional promoter.

49. A method for expressing a recombinant nucleic acid in a stem or progenitor cell comprising:

a) transfecting the cell with an expression cassette comprising an *s-ship* promoter operably attached to the recombinant nucleic acid, wherein the nucleic acid is transcribed.

50. A method of screening for a candidate substance that regulates activity of the *s-ship1* promoter comprising a step selected from the group consisting of:

(a) contacting a nucleic acid comprising an *s-ship* promoter with an *s-ship* promoter binding protein and the candidate substance under conditions that allow binding between the protein and the promoter and determining whether the candidate compound modulates the binding between the protein and the promoter; and

(b) contacting the candidate substance with a cell comprising the *s-ship* promoter operably attached to a reporter gene coding for an expression product and assaying for expression of the reporter gene expression product.

51. A method for identifying stem cells in a population of cells comprising:

(a) administering to cells in the population a nucleic acid comprising an *s-ship* promoter operably attached to a reporter gene.

52. The method of claim 51, wherein the cells are in an organ.

53. The method of claim 51, wherein the cell are in an animal.

54. The method of claim 51, further comprising sorting cells based on expression of the reporter gene.

55. A method for screening for a modulator of cell function comprising:

a) transfecting a stem or hematopoietic cell with an expression cassette comprising an *s-ship* promoter operably attached to a nucleic acid encoding a candidate modulator; and,

b) assaying the cell for a cell function, wherein a difference in cell function in the cell as compared to a cell in the absence of the candidate modulator is indicative of a modulator.

56. The method of claim 55, wherein the modulator is a candidate therapeutic agent for the treatment of a blood-related disease or condition.

57. A method of treating a patient with a blood-related disease or condition comprising:

a) transfecting a cell with an expression cassette comprising an *s-ship* promoter region operably attached to a therapeutic nucleic acid; and,

b) administering the cell to the patient.

58. The method of claim 57, wherein the cell is a bone marrow cell.

59. The method of claim 57, wherein the cell is autologous.

60. The method of claim 57, wherein the cell is allogeneic.

61. The method of claim 57, wherein the blood-related disease or condition is a blood-related cancer.

62. The method of claim 61, wherein the blood-related cancer is leukemia, lymphoma, or myeloma.

63. The method of claim 57, wherein the blood-related condition is anemia.

64. The method of claim 57, wherein the blood-related condition can be treated with stem cell replacement therapy.

65. An isolated polynucleotide comprising a heterologous nucleic acid sequence under the control of a developmental decision promoter.

66. The polynucleotide of claim 65, wherein the promoter is capable of providing expression in embryonic stem cells.

67. The polynucleotide of claim 65, wherein the promoter is capable of providing expression in adult stem cells.

68. The polynucleotide of claim 67, wherein the adult stem cells are differentiated but not terminally differentiated.

69. The polynucleotide of claim 65, wherein the promoter is capable of providing expression in adult stem cells that are in growing phase.

70. The polynucleotide of claim 66, wherein the promoter is capable of providing expression in a cell from mouse embryonic development stages E3-E18.5.

71. The polynucleotide of claim 70, wherein the promoter is further capable of providing expression in a cell that is in a developed animal.

72. The polynucleotide of claim 71, wherein the cell is a stem or progenitor cell in the developed animal.

73. The polynucleotide of claim 72, wherein the promoter does not constitutively provide expression in the stem or progenitor cell in the developed animal.

74. The polynucleotide of claim 65, wherein the developmental decision promoter comprises an *s-ship* promoter region.

75. The polynucleotide of claim 74, wherein the *s-ship* promoter region comprises a sequence that can hybridize under stringent conditions to nucleic acid segment comprising the complement of i) at least 20 contiguous nucleic acids of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5; or ii) SEQ ID NO:6, SEQ ID NO:7 SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10 and/or SEQ ID NO:11.

76. A method for expressing a nucleic acid in a stem cell comprising providing to a cell a polynucleotide including the nucleic acid under the control of a developmental decision promoter, wherein the nucleic acid is expressed in the cell.

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